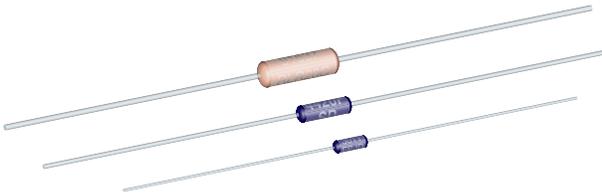


# Metal Film Resistors, Axial, Industrial / High Reliability, Precision



## FEATURES

- Same materials and construction as the non-hermetic MIL-PRF-55182 resistors
- 100 % stabilization and screening tests. Undergoes group A testing to MIL-PRF-55182 (thermal shock, 1 h overload, short time overload, DC resistance) prior to shipping.
- Very low noise (-40 dB)
- Controlled temperature coefficient
- Epoxy coating provides superior moisture protection
- Standard lead is solderable and weldable
- Traceability of materials and processing
- Vishay Dale has complete capability to develop specific reliability programs designed to customer requirements
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS						
GLOBAL MODEL	POWER RATING $P_{70^{\circ}\text{C}}$ W	POWER RATING $P_{125^{\circ}\text{C}}$ W	MAXIMUM WORKING VOLTAGE <sup>(1)</sup> V	RESISTANCE RANGE $\Omega$	TOLERANCE <sup>(2)</sup> $\pm$ %	TEMPERATURE COEFFICIENT $\pm$ ppm/ $^{\circ}\text{C}$
ERC50..500	0.10	0.05	200	10 to 796K	0.1, 0.5, 1	25, 50, 100
ERC55..500	0.125	0.10	200	10 to 2M	0.1, 0.5, 1	25, 50, 100
ERC55..600	0.25	0.125	250	10 to 3.01M	0.1, 0.5, 1	25, 50, 100
ERC65..500	0.50	0.25	300	10 to 3.01M	0.1, 0.5, 1	25, 50, 100
ERC70..500	0.75	0.50	350	10 to 3.01M	0.1, 0.5, 1	25, 50, 100

### Notes

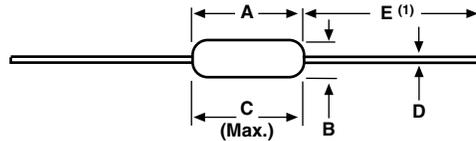
- <sup>(1)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less.  
<sup>(2)</sup> Tolerance of  $\pm 0.1$  % is available only in 50 ppm and 25 ppm temperature coefficients.

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	CONDITION
Voltage Coefficient, Max.	ppm/V	5/V when measured between 10 % and full rated voltage
Dielectric Strength	$V_{AC}$	ERC50-500, ERC55-500 and ERC55-600 = 450; ERC65-500 and ERC70-500 = 900
Insulations Resistance	$\Omega$	$\geq 10^{11}$ dry; $\geq 10^9$ after moisture test
Operating Temperature Range	$^{\circ}\text{C}$	-65 to +175
Terminal Strength	lb	2 lb pull test on ERC50-500, ERC55-500, ERC55-600 and ERC65-500; 4.5 lb pull test on ERC70-500
Solderability		Continuous satisfactory coverage when tested in accordance with MIL-STD-202, method 208
Weight	g	ERC50-500 = 0.11; ERC55-500 = 0.35; ERC55-600 = 0.35; ERC65-500 = 0.84; ERC70-500 = 1.06

GLOBAL PART NUMBER INFORMATION																	
New Global Part Numbering: ERC553K0100FHEA500 (preferred part numbering format)																	
E	R	C	5	5	3	K	0	1	0	0	F	H	E	A	5	0	0
GLOBAL MODEL	RESISTANCE VALUE		TOLERANCE CODE		TEMPERATURE COEFFICIENT		PACKAGING		SPECIAL								
ERC50 ERC55 ERC65 ERC70	R = Ω K = kΩ M = MΩ 10R000 = 10 Ω 21K500 = 21.5 kΩ 3M0100 = 3.01 MΩ		B = ± 0.1 % D = ± 0.5 % F = ± 1 %		E = ± 25 ppm H = ± 50 ppm K = ± 100 ppm		EK = lead (Pb)-free, bulk EA = lead (Pb)-free, T/R (full) EB = lead (Pb)-free, T/R (1000 pieces)		(dash number) 500 = industrial (all sizes) 600 = industrial (55 only)								

**Note**

- For additional information on packaging, refer to the Through Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544)).

**DIMENSIONS** in inches (millimeters)

**Note**

- <sup>(1)</sup> Lead length for product in bulk pack. For product supplied in Tape and Reel, the actual lead length would be based on the body size, tape spacing and lead trim.

VISHAY DALE MODEL	A	B	C (MAX.)	D	E
ERC50-500	0.150 ± 0.020 (3.81 ± 0.51)	0.070 ± 0.010 (1.78 ± 0.25)	0.187 (4.75)	0.016 ± 0.002 (0.41 ± 0.05)	1.25 ± 0.266 (31.75 ± 6.76)
ERC55-500	0.250 + 0.031 - 0.046 (6.35 + 0.79 - 1.17)	0.094 ± 0.012 (2.39 ± 0.30)	0.300 (7.62)	0.025 ± 0.002 (0.64 ± 0.05)	1.50 ± 0.125 (38.1 ± 3.18)
ERC55-600	0.280 ± 0.020 (7.11 ± 0.51)	0.097 ± 0.012 (2.46 ± 0.30)	0.350 (8.89)	0.025 ± 0.002 (0.64 ± 0.05)	1.50 ± 0.125 (38.1 ± 3.18)
ERC65-500	0.562 ± 0.031 (14.27 ± 0.79)	0.180 ± 0.015 (4.57 ± 0.38)	0.687 (17.45)	0.025 ± 0.002 (0.64 ± 0.05)	1.50 ± 0.125 (38.1 ± 3.18)
ERC70-500	0.562 ± 0.031 (14.27 ± 0.79)	0.180 ± 0.015 (4.57 ± 0.38)	0.687 (17.45)	0.032 ± 0.002 (0.81 ± 0.05)	1.50 ± 0.125 (38.1 ± 3.18)

MATERIAL SPECIFICATIONS	
Element	Vacuum-deposited nickel-chrome alloy
Core	Fire-cleaned high purity ceramic
Encapsulation	Specially formulated epoxy compound
Termination	Standard lead material is solder-coated copper. Solderable and weldable per MIL-STD-1276, type C

**POWER RATING**

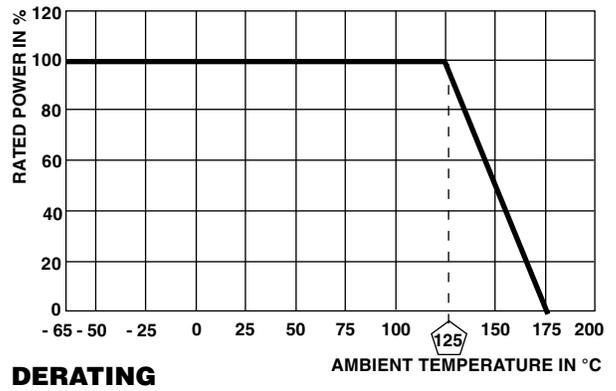
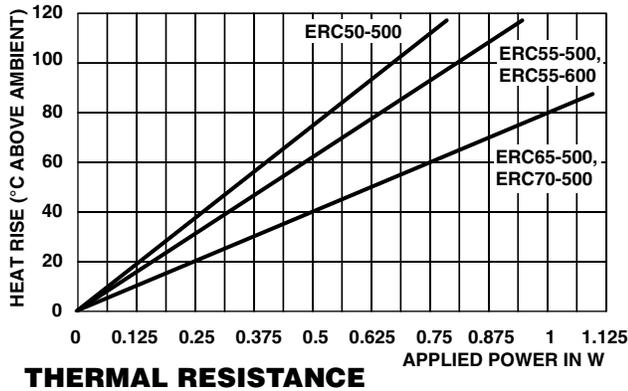
- Power ratings are based on the following two conditions:
- ± 2.0 % maximum  $\Delta R$  in 10 000 h load life
  - +175 °C maximum operating temperature

**APPLICABLE MIL-SPECIFICATIONS**
**MIL-PRF-55182:**

With the exception of the MIL spec's 3 % lead (Pb) requirement, the industrial ERC series would meet the electrical, environmental and dimensional requirements of MIL-PRF-55182.



Vishay Dale ERC resistors have an operating temperature range of -65 °C to +175 °C. They must be derated according to the following curve:



MARKING					
Partial model (for 50 size): C = ERC					
Tolerance (for 50 size): B = 0.1 %, D = 0.5 %, F = 1 %					
Temperature coefficient: T1 = 100 ppm, T2 = 50 ppm, T9 = 25 ppm					
ERC50-500: (4 lines)		ERC55-500, ERC55-600: (4 lines)		ERC65-500, ERC70-500: (5 lines)	
C500	Partial model and dash number	55-500	Size and dash number	ERC65	Full model and size
33K2	Value	1.21M	Value	-500	Dash number
FT1	Tolerance and TC	0.5 % T9	Tolerance and TC	7.68K	Value
1548	4-digit date code	1532	4-digit date code	1 % T2	Tolerance and TC
				1516	4-digit date code



## **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.